THE MANAGER Leading The Way To Profit Through People December 2008

PRO-DAIRY

PRECISION FEED MANAGEMENT

By Paul Cerosaletti and Dale Dewing

What is precision feed management?

What's key to making PFM work? A vision for the future, initiative to take charge of the process and some patience and persistance

INSIDE

Precision feeding or precision feed management (PFM) have become buzzwords in the dairy industry as it attempts to combine feed management and environmental sustainability. In New York State a group from Cornell, Cooperative Extension and industry is working with producers to implement PFM. This group defines PFM as:

The continual process of providing adequate, not excess, nutrients to the animal and deriving a majority of nutrients from homegrown feeds through the integration of feeding and forage management for the purpose of maintaining environmental and economic sustainability.

The New York group views PFM as a continuous improvement process adopted and directed by farm management to meet goals in three areas:

1. Improved: Nutrient efficiency, homegrown feed utilization and milk-income-over-feed cost.

2. Optimized: Purchased feed nutrient imports and crop production for the feeding system.

3. Reduced or minimized: Nutrient overfeeding and nutrient excretion and accumulations.

Because PFM is measurable, it's manageable. From our experience in implementing PFM, we suggest these eight benchmarks a dairy can use to determine if it's accomplishing PFM:

1. Nutrient detergent fiber (NDF) intake as a percent of body weight: $\geq 0.9\%$

2. Forage as a percent of diet: $\geq 60\%$

3. Homegrown feeds as a percent of diet: $\geq 60\%$

4. Ration phosphorus (P) as a percent of requirement: $< 105\%$

5. Diet crude protein: $< 16.5\%$

6. MUN: 8-12

7. Calving interval: < 13 months

8. Cows dead or culled < 60 days in milk: $< 5\%$.

A dairy that continually achieves these day-to-day and periodic benchmarks minimizes manure nitrogen and phosphorus excretions and whole farm mass accumulations. And, importantly in today's economic reality, PFM can increase income-over-purchased-feed costs.

PFM implementation

PFM isn't something that happens to a dairy; it's a process dairy management must take charge of and practice. The benchmarks presented in this month's **The Manager** from PRO-DAIRY are the key measures for determining if you're achieving PFM on your dairy.

PFM is also a team effort. Using the assessments presented in **The Manager,** dairy managers can facilitate the PFM process with key advisers.

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FYI

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Save money with sound decisions

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nearly 10-cent higher IOPFC per cow. That's despite DDG's appearing to be a better buy on a cost per ton basis. Using IOPFC leads to the more profitable decision to feed the bypass soy product.

Cost wasn't the only consideration. The current ration already had high levels of DDG and adding more might depress butterfat levels because of excessive dietary unsaturated fat. Also, it could create poorer amino acid patterns, potentially decreasing milk protein and increasing phosphorus (P) intakes, which are already in excess of dietary P requirements.

IOPFC applies to field crops, too. Consider nitrogen (N) fertilization for corn and grasses. N prices are 400% higher today compared to five years ago. Farmers have made knee-jerk reactions to $800 urea and eliminated N applications on grasses this year.

Farmers may have forgotten that N fertilization, judiciously used in combination with other N sources such as legumes, manure and sod breakdown, has large returns on investment. Without adequate N applications, some dairies are now forage deficient, and the forage they have is lower in protein. These dairies are forced into purchasing forage and more grain. Plus, they may have lower total milk production.

Does PFM work?

As dairies have implemented PFM in various parts of New York, we've seen positive economic and environmental impacts. Some early work showed more than a 30% increase in IOPFC when PFM was fully implemented. At the same time, manure N was reduced 17% and P reduced by 28%.

For an idea of the P reduction, consider that dical is 20% phosphorus. A 28% reduction in manure P excretion equates to approximately 5.5 tons less dical being purchased per 100 cows per year. That's a savings of more than $5,500 to the dairy while decreasing P imports to the farm by 2,200 pounds.

One case study dairy has continued to expand its land base to begin growing high moisture ear corn to meet a portion of its grain needs. This has allowed the dairy to use its land more efficiently for manure application and crop rotations. Currently, the dairy's lactating herd's diet is 67% homegrown feed compared to 10 years ago when it was 42%.

A two-year Cornell Dairy Farm Business Summary study of years 2005 and 2006 indicates that, on average, PFM dairies produced 1,400 pounds more milk per cow but with operating expenses $1.33 per cwt. lower compared to non-PFM cohorts.

These same PFM dairies reduced manure N and P excretions 10 and 25%, respectively, while reducing on-farm accumulations of these nutrients by more than 50%.

Precision feed management is a proven system. For successful implementation dairy managers must take charge of the process on their dairies. Use the benchmarks presented in *The Manager* to monitor and drive the process. ▮

What you need to put PFM into practice

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most limiting factors to delivering quality forage to their cows. Then they must decide what to do to improve in those areas. Devise a plan after seeking input from family, employees, peers and advisers.

Remember, it's your dairy and your goals; you drive the process. Don't be tempted to bite off more than you can handle. Finally, institute a system to monitor your changes to ensure you're moving in the right direction – toward precision feed management. Consistent movement toward your goal will result in success.▮

Nutrients in balance

The Delaware County Precision Feed Management (PFM) project has measured the mass nutrient balance impact on a number of dairies over several years. On average, before PFM, dairies ended each year with 55 pounds more phosphorus (P) per cow than when the year began. To prevent losses to the environment, this extra P must be carefully managed.

After several years of progress toward PFM goals, the same farms averaged only 19 pounds of P per cow per year – a 66% decrease. Similar reductions were observed for nitrogen (N). With less than half the nutrients to deal with, nutrient management best management practices (BMPs) should be more effective.

What is precision feed management?

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Feed, crop and cow advisers know the technical details of what a dairy must change to achieve PFM benchmarks. But managers must drive the process by communicating their goals, asking questions, making decisions and leading the implementation.

Implementing PFM revolves around four actions: monitor, assess, plan and implement. Monitoring requires on-farm records including feed and herd production testing. Effective assessment and planning tactics for implementation result from periodic meetings with farm advisers.

On the crop side, fall or winter meetings with crop advisers and nutritionists prepare managers for the following year's crop season. It's critical that managers integrate ration needs, such as ensuring adequate feed inventory required to feed a higher forage diet, with crop planning. This is best accomplished by getting your nutritionist and crop consultant in the same room at least once a year.

PFM is a continuous process to improve cropping, feeding and nutrient management. It takes time to implement. Our experience suggests that a dairy may take three to five years to work though the web of major changes required to implement PFM. That's followed by diligent monitoring and minor corrections. ▮